

ASAULYUK, Z.; KLOCHKO, I., kand.sel'skokhoz.nauk

Simmenthal cattle on the Trostyanets' State Farm. Nauka i zhittia  
11 no.10:29-30 O '61. (MIRA 15:1)

1. Direktor plemzavodu "Trostyanets'" (for Asulyuk).  
(Ukraine--Simmenthal cattle)

KLOCHKO, I. F.

Acidproof storage for hydrochloric acid. Sakh.prom. 31 no.7:34-36  
J1 '57.  
(MLRA 10:8)

1. Khodorovskiy sakharnyy zavod.  
(Hydrochloric acid--Storage)

KLOCHKO  
KLOCHKO, I.P.

Machining curved grooves on screw-cutting lathes. Sakh.prop.31  
no.9:35-36 8 '57. (NIRA 10:12)

1. Khodorovskiy sakharnyy zavod.  
(Sugar industry--Equipment and supplies) (Screw--Cutting machines)

OSOKIN, Grigoriy Alekseyevich; KLOCHKO, I.K., red.; DUKHO, V.I.,  
tekhn. red.

[In one line] Edinym stroem. Krasnodar, Krasnodarskoe  
knizhnoe izd-vo, 1961. 23 p. (MIRA 16:10)

1. Starshiy operator, rukovoditel' vakhty kommunisticheskogo  
truda Tuapsinskogo neftyanvoda, Tuapse (for Osokin).  
(Krasnodar Territory--Petroleum industry)  
(Socialist competition)

KIRILENKO, V.T.; KLOCHKO, I.K.; LAPIDUS, M.A., red.

[Pattening on a commercial basis] Utkorm na promyshlennoi  
osnove, Moskva, Kolos, 1965. 26 p. (MIRA 18:7)

RUSIAN, I. E.; SOLOV'YEV, S. V.

Dairy Cattle

Results of efforts to build up a highly productive herd of cows Sov. sootekh. 7 no. 7, 1952. Kandidat Sel'skokhozyaystvennykh Nauk Ukrainskiy Nauchno-Issledovatel'skiy Institut Zhivotnovodstva

SO: Monthly List of Russian Accessions, Library of Congress, September 1952 2993, Uncl.

KINNEDY, J. M.

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723210006-

Razdoy Korov v Kolkhozakh i Sovkhozakh Ukrayny (The increased Milk Yield of Cows in Collective Farms and State Farms of the Ukraine) 2. Izd. Moskva, Sel'Khozgiz, 1953.

24 p. Illus., Tables.  
4v/5  
727.61  
1953  
.K6

KLOCHKO, I. V.

Razdol korov v kolkhozakh i sovkhozakh Ukrayny [Increasing the milk yield of cows on Ukrainian collective and state farms]. Moskva, Sel'khozgiz, 1954. 96 p.

SO: Monthly List of Russian Accessions, Vol. 7, No. 3, June 1954.

KLOCHKO, I.P.; CHEBOTKOV, I.P., starshiy nauchnyy sotrudnik

Directed boreholes in steeply dipping seams dangerous  
as to sudden outbursts. Ugol' Ukr. 6 no.8:42-43  
Ag '62. (MIRA 15:11)

1. Glavnyy geolog Gosudarstvennogo tresta ugol'nykh  
predpriyatiy Kalininskoy oblasti kombinata Tulaugol'  
(fam-Klochko). 2. Donetskii nauchno-issledovatel'skiy  
ugol'nyy institut (for Chebotkov).  
(Boring)  
(Coal mining machinery)

Batalpashinsk lakes. M. A. Khebbas. *Zem. red. i anal. prirody*, 6, 213  
17(1931). The computation of the total contents of  $\text{Na}^{+}$ ,  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  in  
Batalpashinsk lakes (North Caucasus) based on the analysis of the Leiman data and  
water sample exploitation without further geological survey of the region and the source  
of the 2 lakes. Attention is called to the possibility of using the lake sand for industrial  
purposes. (Che. - Mem)

APPENDIX D. DETAILING LITERATURE CLASSIFICATION

KLOCHKO, M. A.

Double decomposition in the absence of a solvent, XXIV,  
J. Gen. Chem. Russ., 1933, p. 1026-1039, No. 3

The equilibrium relations in the system  $2\text{LiCl} + \text{Na}_2\text{SO}_4 \rightleftharpoons 2\text{NaCl} + \text{Li}_2\text{SO}_4$   
are discussed.

Electrochemical production of light metals from aqueous solutions. I. Preliminary experiments on the electrolysis of salts of the alkali metals. M. G. Moore. *J. Applied Phys.* (U. S. A.), 23(1-2), 231-233 (1952). *Chem. Zentral.* 1952, 1, 242-243; cf. C. A. 45, 8261. In order to overcome the difficulties encountered in the electrolyses of fused salts (high temps.) and of molten salts, impregnation of electrolysis of certain metals in the free state. Anions were substituted with complex anions to decrease ionic radius of the bromide or chloride of the alkali metal and AlBr<sub>3</sub> or AlCl<sub>3</sub> was used as an electrolyte complex. The bromide of the alkali metal (or the chloro salt) was previously fused with AlBr<sub>3</sub> (or AlCl<sub>3</sub>) and the fused mass dissolved in PhN<sub>3</sub>. The complex bromides and chlorides of the alkali metals are fused in PhN<sub>3</sub>. By this method Li, Na, K and Rb can be distilled on the cathode from bromide salts, and Li and Na from chloride salts. A low c. d. and the use of a graphite anode increase the yield of the metal. The yield (based on current consumed) reaches 25%, and an individual current of 70%. In the electrolyses the alkali metal serves as the conducting cation while the Al appears in the complex anion. The reaction scheme may be represented as follows:  $KAlBr_3 \rightleftharpoons K^+ + AlBr_3^- + e^- \rightarrow AlBr_3 \rightarrow AlBr_3 + Br^-$ . When a Ag electrode is used, the Br combines with it to form AgBr; when a Pt electrode is used, it flows in a thin stream to the bottom of the beaker. The AlBr<sub>3</sub> becomes concentrated in the anode compartment. The exptl. decomps. potentials for the alkali metals correspond to the calcd. values. M. G. Moore

*CH*

Theory of physicochemical analysis. I. Investigations of homogeneous solutions by methods of physicochemical analysis. M. A. Klinchin. Bull. Acad. Sci. U.S.S.R., Chem. Ser., 1957, No. 1, p. 31-36; English, 1957, 231-232.

Physicochemical analysis connects itself with a study of the dependence of various properties of systems to their equal or their constant and conditions of equal, as well as with the definition of various generalizations and relations. Such properties must be divided into kinetic, energetic and mechanical functions. The rate of change of an equal system from some stationary condition to equal and vice versa necessitates the consideration of a law of properties including time (the so-called kinetic properties), such as rate of reaction, rate of vaporization, transition from one state to another, etc. Such properties, in a theory of physicochemical analysis, correlate the conclusions resulting from the geometric method with the principal theorems of the kinetic theory of matter. A study of the kinetic properties of systems and comparison with others energetic and kinetic properties makes it possible to solve the question regarding the causes of the "inability" of one or the other property. Each point of an equal diagram is connected with its surroundings by the principle of continuity. The properties of the surroundings help to obtain a general idea of the properties of one

point of the diagram and thus what is the most rapid. The law of the extent of the transformations according to the concept is. The method of analogic diagrams provides a general aspect of a complex diagram starting from a simple diagram. On the basis of the law of transformation of states (proceeding a singular stage of the theory), the measure of equal correspond appears to certain regions, while the measure correspond to the other complex of concepts. The geometric of distributions must be verified for real systems. The method of analogy, in most geometries and their transformations cannot be applied by studying the behavior and properties of these systems, this is shown in the case of the analogies existing between the rule of Goldschmidt concerning the relation between the number of elements comprising the solution to those of the number of elements of the three-dimensional closed polyhedron and the Goldschmidt's rule. In order to obtain more valid results in physicochemical analysis it is necessary to study the systems and their properties "in motion", i.e., when changing all conditions of equal and in relation to all elements of equal.

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## 1.1.1.2 METALLURGICAL LITERATURE CLASSIFICATION

Item 110-0100

Volume 110-0100-000-000

Volume 110-0100

*[Signature]*

Investigation of homogeneous solutions by methods of physicochemical analysis. II. Electrical conductivity, viscosity and specific gravity of the binary system aluminum bromide-nitrobenzene. M. V. Kargin, N. S. Bakharev, A. I. R. S. S., Izv. Akad. Nauk. SSSR, No. 1, 1937, p. 11; Zhur. Fiz. Khim. 11, No. 1, 1937, p. 11; Zhur. Fiz. Khim. 11, No. 1, 1937, p. 11. English translation: J. Russ. Phys. Chem. Soc. 11, No. 1, 1937, p. 11.

The elec. cond., viscosity and sp. gr. of various mixtures of the binary system AlBr<sub>3</sub>-nitrobenzene from 0° to 100° AlBr<sub>3</sub> at temps. from 5° to 100° were determined. The polythymes of elec. cond., viscos., and sp. gr. less than 20% AlBr<sub>3</sub> pass through their max. at a temp. that rises in accord with the higher content of solv. In question (these dependences), the maxima of elec. cond., viscosity & mass, and 1/mass. The former correspond to the sphere of curvature of the given system and are displaced with temp., in the direction of AlBr<sub>3</sub>. The latter corresponds to the concave of the charn. compd. AlBr<sub>3</sub>-C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub> and is not displaced with temp. (angular max.). The polythymes of viscosity have breaks (where the fall in viscosity is retarded, starting down the rise of temp.) which are not at a temp. corresponding higher with increasing AlBr<sub>3</sub> content; the temp. of these breaks coincides with the temp. max. of the elec. cond., polythyme. The viscosity inhomogeneity constant of 2 branches, curves in the compd., and crossing it at 8 single points corresponding with the concave of the charn. compd. The breaks on the viscosity inhomogeneity curves correspond roughly to the concave of mass, of the elec. cond., inhomogeneity. The temp., cond., compd., curves are similar for viscosity and elec. cond., and, being heated on either side from the axis of inhomogeneity, form a mirror reflection of each other; they form a max. corresponding to the concave of the charn. compd. The inhomogeneity of elec. gr. compd. of the charn. compd.

a straight lines crossing under very obtuse angles with radius, the abscissas of which correspond to the compds. of the above compd.. The temp. coeff. of sp. gr. changes very little with temp. in general, whereas the temp. of the temp. coeff. in the other properties decreases sharply with temp., that is, on account of salt effect in water. The results of this research similar to those of other studies of electrolytic systems, are not to be explained from the viewpoint of the usual conception of the theory of electrolyte dissociation, that is, of the existence of some sort of "dissociating force" of the solvent and of the increased dissociation into ions with salts. The const. of electrolytic systems as well as the changes in this property that depend on variations of ionic conductance of the system, and also the relation of elec. cond. to the changes in viscosity of the system, can be interpreted only when based on the following assumptions: 1) complete dissociation of electrolytes into ions independent of structure; 2) the degree just played by the ionic character of the solv. of the components of the system and of their compds.; and, 3) dependence of the modulus of the ionic conduction on viscosity of the system. In the system AlBr<sub>3</sub>-nitrobenzene, the components of which individually are practically non-conductive, the electrolyte is represented by the compd. that they form, AlBr<sub>3</sub>-C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>, and is distinguished by a substantial thermal discharge and const. of current, in the liquid state. Following

as increases in temp., this example, distinguishes itself from conductive (or poorly conductive) constituents, which is indicated by the rapid fall in obs. cond. in terms of temp., approaching the point of solidification and disappearance, of the solute. When added in a sufficient quantity to the given fusible temp., transference it into a liquid state or greater, reduces the viscosity; although opposite, therefore, from what greater obs. cond. that as a result of the decrease in cond. of obs. cond. is eng. in all cases in which a decrease in viscosity with temp. due to not very great, and by increasing the ionic conductivity, does not overlap the decrease in obs. cond. which follows as a result of the temp. decrease of the conductor's const.

W. A. Cook

1 Resources of salts in Elton Lake and their utilization.  
M. A. Klyshko, *J. Applied Chem.* (U. S. S. R.) 19,  
420-421 (Private 844) (1957). - The resources of the  
above lake are described and a simple method of their  
extraction, evaluation is given. An isothermal curve of the  
Elton lake brine yields a NaCl ppt. and a MgCl<sub>2</sub>-mid.  
salt. Processing over the brine yields a NaCl and Na<sub>2</sub>SO<sub>4</sub>.  
2Na<sub>2</sub>O ppt. Twenty-three references. A. A. P.

Ca

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**Conduction of electrolyte systems.** M. A. Khokha,  
Compt. rend. acad. sci. U. R. S. S. 16, 107-111 (1931)  
(in English).—An attempt is made to interpret the change  
of cond. with simultaneous changes of concn., temp. and  
pressure. Both binary and ternary systems are dis-  
cussed. Points considered include cond. of components  
before admixing, the energy required to produce a  
liquid state, the num. of non-conductors present at  
equil., changes in the no. and mobility of ions, changes in  
viscosity and the effect of electrostatic forces under very  
various conditions. Salt water, molten salts and other non-  
sq. systems are considered. Difficulty is experienced in  
the interpretation of present exp'l. data based on the  
R. P. Debye theory.

**830-16.6 METALLURICAL LITERATURE CLASSIFICATION**

APPROVED FOR RELEASE: 06/19/2000

**CIA-RDP86-00513R000723210006-0"**

The "lake age" of the Caspian Sea and its volume at the time it became a closed basin. M. A. Kirzhner, *Geogr. rev.*, *vol. 37* (1951), pp. 31-35 (in Russian and English).—The growth of (B), and (C) time, the rates of their current, and the percentage of total dissolved salt in (1) the ocean, (2) the Caspian Sea and (3) the Volga were determined. These data were used to calculate that the Caspian Sea lost its connection with the ocean 5500 years ago and that its volume at that time was 1.6 x 10<sup>12</sup> cu. m.

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#### **12.1.6 METALLURGICAL UPGRADING CLASSIFICATION**

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723210006-0"

Form of the viscosity curves and viscosity diagrams and of the temperature-viscosity curves of these properties for binary systems where components form eutectic compounds. M. A. Kostylev, *Zhur. fiz. khim.*, 1938, No. 5/6, 571-581 (in Russian); *J. Russ. Phys. Chem. Soc.*, 1891, No. 27, 1-11. The relation between the viscosity and the temp., osm. bathosme and the form of the temp.-visc. curves of these properties are discussed. In eutectic binary systems the singularities are also considered. bathosme is connected with the corresponding max. of viscosity in such systems. The concept of the char. const. formed in such systems is shown by (1) singular max. on the temp.-visc. curve of char. const. and (2) max. abs. value of the temp.-const. of viscosity. In non-eutectic systems the extremes on the temp.-const. curves of char. const. and viscosity appear more distinct and their concept appears more clear to that of the concept formed the less this concept, however, as the nearer this system approaches to eutectic under the given equal. conditions. B. Z. Kostylev

D. J. Kunkle

**APPROVED FOR RELEASE: 06/19/2000**

CIA-RDP86-00513R000723210006-0"

Study of homogeneous solutions by methods of physico-chemical analysis. III. M. A. Kharbin, and O. P. Chumakov. *Bull. Acad. Nauk SSSR Ser. Khim.* 1956, no. 10, p. 2111-2113; *ibid.* 1956, no. 11, p. 2115-2117. The elec. cond.,  $\sigma$ , and op. gr. of solutions of the system  $\text{PNaH}_2\text{HOAc}$  were dried. Elec. cond. and  $\sigma$  were measured at 0, 10, 20, 30, 40 and 75°; op. gr. was dried. at 20, 30 and 75°. Elec. cond. measurements were also made at -6.5°. Within the interval -6.5-0° the elec. cond. increased two times, and also a min. at 20 mol. %  $\text{PNaH}_2\text{HOAc}$ , which corresponds to the compound  $\text{Zn}(\text{OAc})_2\text{PNaH}_2\text{HOAc}$ . With increasing temp. the min. levels out, the lower max. above 20 mol. %  $\text{PNaH}_2\text{HOAc}$  disappears, and the higher max. under 20 mol. %  $\text{PNaH}_2\text{HOAc}$  approaches the compone. of  $\text{Zn}(\text{OAc})_2\text{PNaH}_2\text{HOAc}$ . The elec. cond. increases rapidly but rather uniformly with increasing temp. The elec. cond. changes with time, increasing very little at low temp., but decreasing with rising temp. above 40°. A dry gel changes its electrical conductivity 1% per 24 hrs. to 50%, but at 50 and 75° it increases by 1% per 24 hrs.

The ionization of  $\sigma$  have max. which change from 30 and 40 mol. %  $\text{PNaH}_2\text{HOAc}$  at low temp. to 20 mol. % at 75°. With a decreasing temp. the max. of  $\sigma$  approaches the compone. of  $\text{PNaH}_2\text{HOAc}$ . The op. gr. ionization shows a max. at 20 mol. %  $\text{PNaH}_2\text{HOAc}$ . The elec. cond.,  $\sigma$ , and op. gr. measurements were also made of acetamide and its salts in  $\text{HOAc}$  and  $\text{PNaH}_2\text{HOAc}$ . The op. gr. and  $\sigma$  of all three salts differ little from those of the system  $\text{PNaH}_2\text{HOAc}$ , but the elec. conductivities of the acetamide salts are lower than those of those of the corresponding binary systems, except about the same const. of  $\text{HOAc}$  and  $\text{PNaH}_2\text{HOAc}$  present in acetamide. Elec. cond. of acetamide in water is small. These facts indicate that  $\text{Zn}(\text{OAc})_2\text{PNaH}_2\text{HOAc}$  is formed in the system  $\text{PNaH}_2\text{HOAc}$ . IV. M. A. Kharbin, *Izv. Akad. Nauk SSSR Ser. Khim.* 1956, no. 10, p. 2113 (in English, 1953). The elec. cond.,  $\sigma$ , and op. gr. of the system  $\text{AlBr}_3\text{KNa}\text{PNaH}_2\text{HOAc}$  were dried for five portions of the system within the temp. interval 20-50° and for constant up to 10 mol. %  $\text{AlBr}_3$  and 20 mol. %  $\text{KNa}$ . The salts were divided into two groups: (I) cation.  $\text{KNa}$  had varying  $\text{AlBr}_3$  contents, and (II)

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const. ratio of bismuthate has varying concn. of PhNO<sub>3</sub>. At a const. KBr content the hardness of a show a sharp const. while dsc. const. shows a const. bath points converging to equal. ratio of AlBr<sub>3</sub>/PhNO<sub>3</sub>. The derivative in this system is KBr/AlBr<sub>3</sub> which is min. discrete into complex lines. Const. of KBr/AlBr<sub>3</sub> depends little upon the solvent, but it is decreased by AlBr<sub>3</sub>, PhNO<sub>3</sub>, Al low temp., and high concn. of AlBr<sub>3</sub>; the const. is very small on account of the great  $\eta$  and the effect of the KBr upon the const. is not large, it depends upon AlBr<sub>3</sub>, PhNO<sub>3</sub>. The effect of temp. upon the dsc. const. and the hardness is the same; both increases with rising temp., the polythione of each property diverging, but upon decreasing the temp. the polythiones converge at one point (10°). The hardness of sp. gr. of a const. KBr constant show a small break at 40-50 mol. % AlBr<sub>3</sub>. The polythiones are nearly straight lines.

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\* Detailed problems of the theory of physicochemical systems. N. S. Kurnakov and M. A. Ayres. Comp. Rev. and. ref. U. R. S. S. 25, no. 4 (1963) (in English).—The dependence of properties on the composition of a system can be represented by (1) empirical formulas or (2) graphical curves, such as lines or surfaces; the geometrical method is the essential feature of present-day physico-chem. analysis. Comp.-property curves are (a) continuous and (b) specific for every individual compon. or phase of variable compn. The type of diagram depends also on the processes taking place in systems. Each diagram for a polycomponent system can be considered formed from a diagram for a system with a lower no. of components, but made more complex by the introduction of new components or new equl. conditions. Diagrams have many common features. Use is made of topology in the construction of compo.-property diagrams.

George Ayres

400-364 METALLURGICAL LITERATURE CLASSIFICATION

6-67-000000000000

NAME OF THE WORK  
COMPOUND

6

The electric-conductivity isotherms of two-component liquid systems. M. A. Kargin. *Bull. acad. sci. U.R.S.S., Class. sci. TÉCHN.* 1938, 12(3-4) (in English, 1940).—Two-component liquid systems are classified as follows: (1) Both components are nonconducting and form no complex; their cond. isotherms coincide with the change in ( $\Delta f_{\text{cond}}$ )- $\Delta f_{\text{cond}}$ ); (2) the cond. increases uniformly from the nonconducting to the conducting component ( $\Delta f_{\text{cond}}$ -conducting salt,  $\Delta f_{\text{cond}}$ -conducting salt); (3) the cond. increases from the less conducting to the more conducting component ( $\text{KCl-NaCl}$ ); (4) a non-conducting compd. is formed which does not change the cond. of the system composed of nonconducting components; (5) a combination of types 1 and 2; (6) 2 diagrams of type 2; (7), (8) and (9) other combinations of the first 4 types. Besides these 9 types (these are considered 13 derived types which represent the 19 fundamental types to which the effect of the  $\alpha$  is considered). The fundamental types predominate at temps. far removed from the m. p. of the components or in the presence of a 3rd indifferent component. In these cases the effect of the  $\alpha$  is not important. In deriving these types it was assumed that the degree of the electrolyte dissociation is independent of the source. Therefore, their application to real systems shows that the degree of dissociation does not increase with diln. The group of systems composed of weak electrolytes and water is an exception. Their cond. isotherms deviate frequently from the typical isotherms. The cond. isotherms of all other systems (fixed salts, eq. and miscq. conducting salts, and systems in which chern. compds. are formed) can be explained qualitatively on the basis of the types derived in the paper. Three factors affect the character of the change of the cond. with the compnd.: (1) the relative values of the cond. of the components of the system in the individual liquid state and chern. compds. formed in this system, (2) the nature of the interaction between the components of the system, (3) the nature of the change of the  $\alpha$  isotherms in the system. 43 references. W. H. Henm

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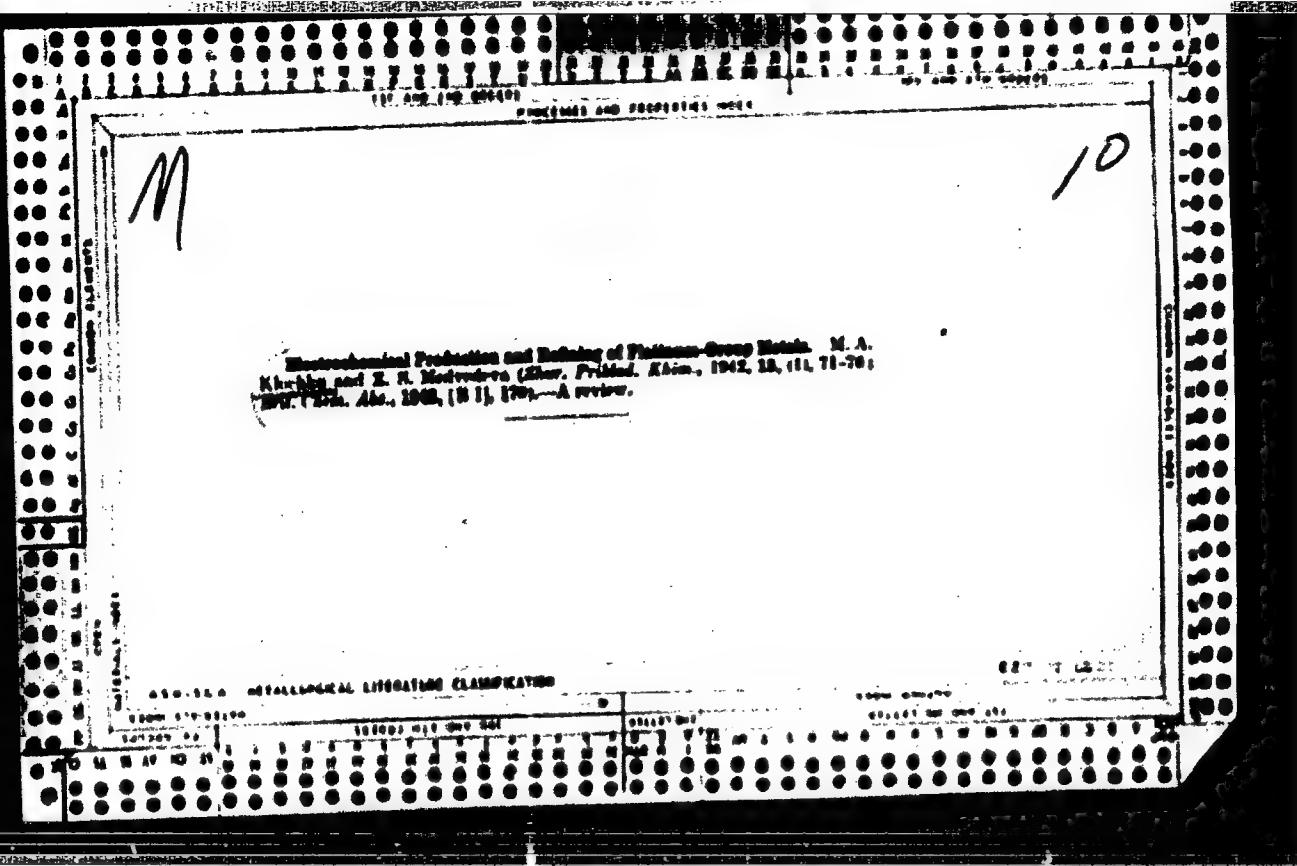
APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723210006-0"

KLOCHKO, M. A. and MEDVEDEV, Z. S.

"Use of Palladium for Electroplating." J. Appl. Chem. Russ., 1942, 15, 25-46.

Bright adherent coatings of Pd cannot be electrodeposited on Fe or Al cathodes. Those forming on Cu cathodes from electrolytes of the type R<sub>2</sub>PdCl<sub>4</sub>-HCl (R = H, NH<sub>3</sub>, Na, or K) are uneven and discoloured, and non-adherent when thicker than 0.1μ. This is ascribed to a cementation process, involving replacement of Cu by Pd, and proceeding even during passage of current. Better results were obtained with the electrolyte 2.5% eq. Na<sub>2</sub>Pd(NO<sub>3</sub>)<sub>2</sub> in 3% eq. NaCl (Pd anode, c.d. > 1 ma./cm.<sup>2</sup>, at 40°), but the thickness of the coating was > 1μ, and the process is slow. Of a no. of other electrolytes tested, the best results were given by that recommended by Zvyagintsev et al (B., 1939, 535), containing Pd (NH<sub>3</sub>)<sub>8</sub>(NO<sub>3</sub>)<sub>2</sub>.



KLOCHKO, M. A. and MEDVEDEVA, Z. S.

"Electrochemical deposition of tin from solutions of tin compounds."  
J. Appl. Chem. Russ., 1942, 15, 120-127.

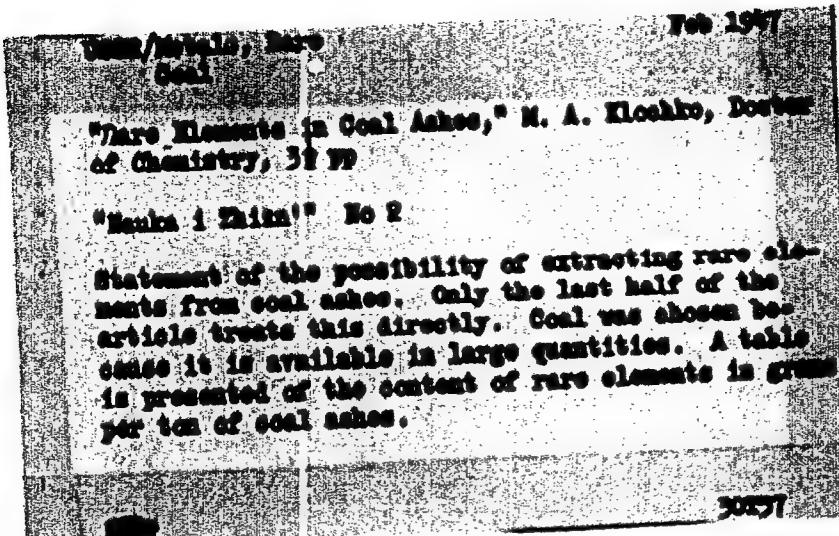
Sn can be recovered from solutions of  $\text{SnCl}_4$  in eq. HCl (10-140g. of HCl/l.) by electrolysis with Fe anodes in presence of ~ 2g. of glue per l., the cathodic c.d. being 300 amp./m.<sup>2</sup>. The [Sn] can be reduced from, e. g., 115 to 6 g./l. with a current yield of ~ 100%. Electrolysis of  $\text{SnCl}_4$  + HCl with a C anode gives low yields (< 40%) of Sn. Electrolysis of  $\text{SnCl}_4$  solutions in 2.8% NaOH + 3% NaOAc at cathodic c.d. of 300 amp./m.<sup>2</sup> gave high current yields but only ~  $\frac{1}{4}$  of the original Sn was then deposited.

CA

Electroplating with Pd and Pt. M. A. Kjuchko and  
S. M. Minkovitz. Ann. metal plating, Jan. 1966,  
No. (U. S. G. D.) No. 19, 100-15(1966).--Review with  
an abstract. A short section on Rh-plating is included.  
H. M. Lester

4

KLOCHKO, M. A.



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Physical-chemical analysis of aqueous solutions.  
 v. The binary system silver-nitride; melting,  
 electric conductivity, viscosity, and density. M. A.  
 Kharlamov and G. P. Chavchavadze (N. S. Kurnakov Inst.  
 Kurchatov and G. P. Chavchavadze (N. S. Kurnakov Inst.  
 Chem. Phys., USSR), Bull. Acad. Sci. U.S.S.R.,  
 Chem. Ed., No. 6, 200-204 (1947).  
 The melting diagram has a melt. at 33  
 mole % (PbNiO<sub>3</sub>) at 67° corresponding to the compound  
 Ag<sub>2</sub>PbNiO<sub>6</sub>, which is the analog counterpart of the  
 Ag<sub>2</sub>O-PbNiO<sub>3</sub> found in the same way by Franklin  
 (J. Am. Chem. Soc., 64, 27, 1942). Ag<sub>2</sub>PbNiO<sub>6</sub> has a  
 sharper melt. and is more soluble. There is a eutectic  
 point at 60 mole % (PbNiO<sub>3</sub>) at -17.6, and possibly also  
 a eutectic very close to 40%. The m. temp. of pure  
 Ag<sub>2</sub>O was found somewhat below -65°, not at -73°.

The vis. const. of v. at 60 mole % PbNiO<sub>3</sub>, where it melts apparently  
 sharply, passing an induction at about 30 mole % and  
 showing a melt. at 33 and 60 mole % at 67° and 73°,  
 respectively; the sharp const. of v. has a melt. at about 30 mole %  
 (PbNiO<sub>3</sub>); the sharp const. then appears to belong to  
 the compound Ag<sub>2</sub>PbNiO<sub>6</sub> at the melt. v = 127 and 137  
 $\times 10^{-4}$  cm.<sup>2</sup> sec.<sup>-1</sup> at 67° and 73°, respectively. The viscosity  
 v has a sharp melt. at 60 mole % (PbNiO<sub>3</sub>). v = 8.3  
 and 2.7 centipoise at 67° and 73°, respectively; the temp. const.  
 of v has a melt. at about 60 mole %. The d. has a melt.  
 at about 30 mole %.

KLOCHKO, M. A.

EX-2100

USSR/Chemistry - Systems, Ternary      Jan/Feb 1948  
Chemistry - Conductivity, Electric

"Investigation of Anhydrous Solutions by Physical  
Chemical Analysis, Part III: Triple System,  
Aniline - Acetic Anhydride - Water; Fusibility,  
Conductivity, Viscosity," M. A. Klochko, O. F.  
Chamukvadze, Inst of Gen and Inorg Chem, Acad  
Sci USSR, 9 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 1

Describes study of electroconductivity and viscosity  
at temperatures of 0°-75°, and also of fusibility  
in triple system, aniline - acetic anhydride -  
water.

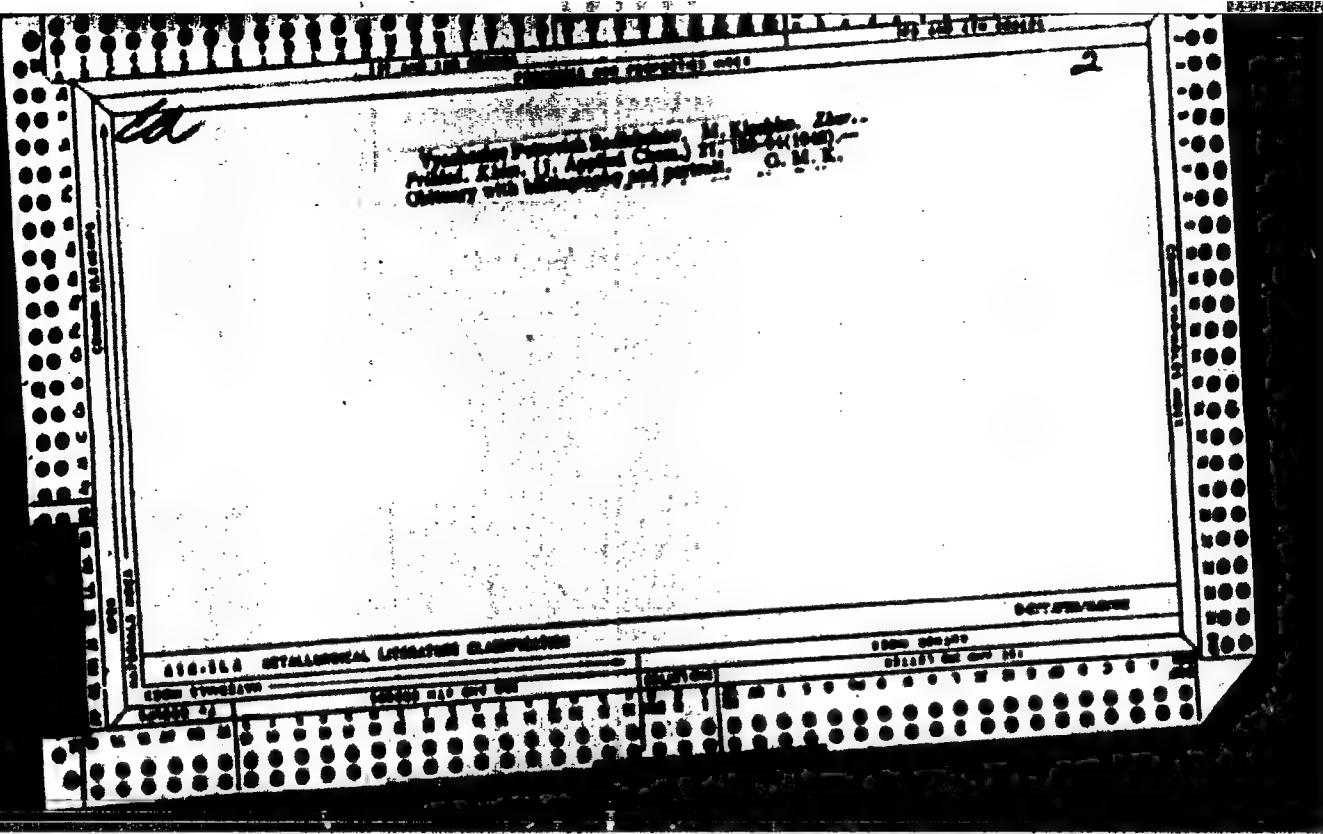
6676

experimental investigation of nonstoichiometric systems. VI. The ternary system  $\text{Ac}_2\text{O}-\text{Pb}(\text{NH}_4)_2-\text{H}_2\text{O}$ . M. A. Klimova and U. P. Chashchukova (N. S. Kurnakov Institute of High. Chem. Acad. Sci. U.S.S.R., Moscow). J. Am. Chem. Soc. Chem. Abstr. U.S.A., 1948, 70, 4146 (Russian); cf. C. A. 43, 6165b. - Data of measured temperatures, etc., viscosity, etc., and of 4. over molar, for the primary system (I)  $\text{Ac}_2\text{O}-(\text{Pb}(\text{NH}_4)_2)-\text{H}_2\text{O}$ , along the 6 sections of const. 11 $\text{H}_2\text{O}$  (molar %): (1) 31.4, (2) 22.4, (3) 20.0, (4) 17.1, (5) 10.0, and (6) 61.0; sections 1 and 2 correspond, in the secondary system (II)  $\text{Ac}_2\text{O}-(\text{AcOH})-(\text{Pb}(\text{NH}_4)_2)$ , to 24.0 and 21.0 molar % ( $\text{AcOH}$ ), resp., sections 4, 5, and 6, in the secondary system (III)  $(\text{AcOH})-(\text{Pb}(\text{NH}_4)_2)-\text{H}_2\text{O}$ , to 28.0, 67.1, and 77.1 molar %  $\text{H}_2\text{O}$ , resp. (II) In the triangular diagram II, the sections of I correspond, on all sections, to 23.2 molar %  $(\text{Pb}(\text{NH}_4)_2)$  and lie on the straight line running from  $2\text{Ac}_2\text{O}/(\text{Pb}(\text{NH}_4)_2)$  to  $2(\text{AcOH})/(\text{Pb}(\text{NH}_4)_2)$ . A solid straight segment runs from  $(\text{AcOH})$  to  $2\text{Ac}_2\text{O}/(\text{Pb}(\text{NH}_4)_2)$ ; these form the most stable products in the system. Isotopic points are (1)  $-17.3^\circ$ , 6.20 molar %  $(\text{Pb}(\text{NH}_4)_2)$  and  $-30^\circ$ ,

20.7%; (2)  $-8.0^\circ$ , 3.22, and  $-25.3^\circ$ , 20.27. Isotopic lines are drawn vertically. (3) The 0, 15, 20, 30, 50, and 75° isotherms of  $\epsilon$  for section 4, against molar %  $(\text{Pb}(\text{NH}_4)_2)$ , show maxima and inflections; the latter leading to go over into solutions at lower temps. and to disappear at higher temps. On the ternary projection (I), the line of max.  $\epsilon$  runs from close to  $2\text{Ac}_2\text{O}/(\text{Pb}(\text{NH}_4)_2)$ , first in the general direction of the  $\text{H}_2\text{O}$  corner, but then deviates markedly towards the  $(\text{AcOH})-\text{H}_2\text{O}$  side in the first half of the triangle (that corresponding to III). High  $\epsilon$  values of  $\epsilon$  are shown in the region close to the  $\text{H}_2\text{O}$  corner. The isotherms of  $\epsilon$  (section 4) have max., the higher the lower the temp.; equally, the trend of change of  $\epsilon$  with the concn. is reversed with regard to  $\epsilon$ . As the decrease of  $\epsilon$  with rising temp. is greater than the increase of  $\epsilon$ , the product  $\epsilon \cdot \text{temp.}$  decreases. The vis. const. of the system is dstd. by the const. between  $\text{Ac}_2\text{O}$  and  $\text{Pb}(\text{NH}_4)_2$ , and decreases with its increasing dimension. The effect of  $\text{H}_2\text{O}$  on both  $\epsilon$  and  $\eta$  is the same as that of the  $\text{H}_2\text{O}$ . Thus

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CA

Analogy between plane ruler and the Euler theorem for  
polyhedrons. M. A. Kharlamov (N.S. Kurmakov Inst. of  
Cont. and Instr. Chem., Acad. Sci. Ukr. SSR). Izv.  
Sibirsk. Fil. Khim. Anal., Izd. Otdel. Nauq. Khim.-  
Akhad. Nauk SSSR, 19, 23-24 (1949). --- The similarity  
between the plane ruler equation and the Euler (Leonard)  
theorem in geometry is pretty one of form based primarily  
on the similarity of certain algebraic groupings. M. Harsh

ANOSOV, Viktor Yakovlevich, professor, doktor khimicheskikh nauk; POGODIN, Sergey Aleksandrovich, professor, zasluzhennyy deyatel' nauki i tekhniki RSFSR, doktor khimicheskikh nauk [authors]; VOL'FKEVICH, S.I., akademik; KLOCHKO, M.A., professor, doktor khimicheskikh nauk, laureat Stalinskoy premii [recipients].

Second awarding of N.S. Kurnakov's prize ("Fundamentals of physicochemical analysis." V.IA. Anosov, S.A. Pogodin. Reviewed by S.I. Vol'fkevich, M.A. Klochko). Izv. Akad. Nauk. SSSR. Ser. Khim. 1952, No. 6 (MLRA 6:7)

(Chemistry, Analytical) (Pogodin, Sergei Aleksandrovich)  
(Anosov, Viktor Yakovlevich, 1891- ) (Chemistry, Physical and theoretical)

Klocko, M.A.

Electroconductivity and viscosity of the system lithium chloride - water

which at higher temperatures becomes a single curve. The curves of the crystal glass point and the melting point of the glass are shown in Fig. 12. The curves of the crystal glass point and the melting point of the glass are shown in Fig. 12. The curves of the crystal glass point and the melting point of the glass are shown in Fig. 12. The curves of the crystal glass point and the melting point of the glass are shown in Fig. 12.

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**CIA-RDP86-00513R000723210006-0"**

KLOCHKO, M. A.

*✓ Viscosity studies and viscosity of the system lithium nitrate-water. M. A. Klochko, I. V. Ch. Grigor'ev (N. N. Kurnakov Inst. Dostizhenii Chem. i Akad. Nauk SSSR). Zhur. Khim. Akad. Nauk SSSR, No. 11, 21, 213-10 (1933). — This system was studied at  $\text{LiNO}_3$  concent. of 0-40.0 mol.-% and 25, 40, 75, and 100%. The no time on the road, curves shifted from 10.8 mol.-% at 25° to 11.8 mol.-% at 100%; the cryohydric point is at 11.6 mol.-%. On approx. the same points on the viscosity curves a sharp rise started. The trihydrate was marked on the property curves either by breaks or bends. In aq. soln., the viscosity decreases from pure salt to pure  $\text{H}_2\text{O}$ . It is also possible that the ions migrate under the influence of an electric field in a shell of  $\text{H}_2\text{O}$ . The dimensions of this shell depend on the concen., considering that at a concen. of 90 mol.-% 1 mol. of  $\text{H}_2\text{O}$  is shared by 18 ions and only at 33.2 mol.-% does each ion have a mol. of  $\text{H}_2\text{O}$ . Pure fused  $\text{LiNO}_3$  at 200° had a cond. 0.80 ohm "cm." or twice  $\text{CaCl}_2$  mol. on d. at 100%. M. Hirsch*

KLOCHKO, M.A.

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*/* Dissociation and viscosity of the systems H<sub>2</sub>O-LiNO<sub>3</sub> and MeOH-LiNO<sub>3</sub>. N. S. Korchakov and L. O. Chirkov. V. S. Kurnakov Inst. of Macromolecular Chem., Acad. Sci. U.S.S.R., Izhevsk, Tver. 527149 U.S.S.R. *Zhur. Fiz. Khim. Akad. Nauk. SSSR* No. 1, 1965, p. 131-137 (1965). — In this investigation the concn. of LiNO<sub>3</sub> was 0-34.05 mol.-%, and the temp. 0, 5, 25, and 50°. The cond. curves had maxima that shifted toward higher concn. with the rise in temp. Thus, at 0° the max. coincided with 8 mol.-% and at 50° with 8.8 mol.-%. The viscosity curves rose greatly at first and then sharply. Generally, the property curves of LiNO<sub>3</sub> in MeOH resembled closely analogous curves in H<sub>2</sub>O except for the numerical values of the resp. points. At 55° the cond. max. in H<sub>2</sub>O coincided with 10.3 mol.-% LiNO<sub>3</sub>, as it in MeOH with 8.2 mol.-%. The abs. value of cond. at 25° and 50° in H<sub>2</sub>O was 5.4-6.9 times the corresponding value in MeOH, whereas the viscosity in MeOH was only 1.34-1.38 times the corresponding value in H<sub>2</sub>O. Apparently, the interaction of components in the 2 systems is quite different.

—4—

M. Namb

KLOCHKO, M.A.

Properties of lithium nitrate solution in equimolecular mixtures of water and dioxane. M. A. Klochko and I. G. Chikatova (N. N. Kurnakov Inst. Chem. Phys., Chernogolovka, USSR). Zhur. Tekhnicheskoi Khim., Akad. Nauk S.S.R.S., 17, 218, 207 (1971). - Compl. viscosity,  $\eta$ , layer temp. temp. of onset of temp. of 6.90-34.40 mol-% LiNO<sub>3</sub> were studied in equimolar mixtures of H<sub>2</sub>O and dioxane at 15-75°. The  $\eta$  of 10% LiNO<sub>3</sub> mixt. was  $2.17 \times 10^{-3}$ ,  $3.34 \times 10^{-3}$ , and  $14 \times 10^{-3}$  mhos/cm. at 23, 30, and 75°, resp. The temp. of appearance of crystals rose with the LiNO<sub>3</sub> content from 2.5° in soln. free of LiNO<sub>3</sub> to 8.2° at 20.17 mol-% LiNO<sub>3</sub>. At 11 mol-% there was a band in the  $\eta$ -temp. curve at an layer segm. at 14.15°. At the LiNO<sub>3</sub> concentration 24.41 mol-% the  $\eta$  of the layer segm. decreased 24.41 mol-%. The  $\eta$  of the layer segm. rose with the presence of LiNO<sub>3</sub> from 1.1 to 1.4 mol-%, and 1.1 mol-% LiNO<sub>3</sub> to 1.1 mol-%, from 1.1 to 1.4 mol-%, at -0.1 from 10 to 10.1 mol-%, and 1.1 to 2.7 mol-%, at -0.1 from 10 to 10.1 mol-%. The  $\eta$  of the layer segm. from 7 to 28 mol-% LiNO<sub>3</sub>. Color perception of a compn. entirely outside the layer segm. from 1.1 to 2.7 mol-% LiNO<sub>3</sub> rose uniformly with temp. The

solid polymers for 10.1 mol-% LiNO<sub>3</sub> had a band at a solid close-by, where layer segm. begin. The solid polymers for 11.20 mol-% LiNO<sub>3</sub>, which compns. is entirely within the layer segm., had no bands and rose sharply with temp. The cond. was dead in the lower layer which contained practically all of the LiNO<sub>3</sub>. Cond. both between and bonds on the boundary of the layer segm. zone. Upon entering the layer segm. zone the cond. rose slowly and stopped upon emergence from it. The viscosity and  $\eta$  curves behaved in an analogous manner. For comparative exams. of LiNO<sub>3</sub> at 13° in H<sub>2</sub>O, MeOH, and H<sub>2</sub>O-dioxane 1:1) the r.s.p. da a h.c. cond. ( $\eta$ ), viscosity ( $\eta$ ), and temp. r.s.p. of cond. ( $\eta$ ) and of viscosity ( $\eta$ ) are: for 10.1 mol-% LiNO<sub>3</sub> in H<sub>2</sub>O  $\eta = 0.1639$  mhos/cm.,  $\eta = 1.46$  centipoise,  $\eta_{H_2O} = 1.423$ ,  $\eta_{MeOH} = 1.513$  and  $\eta_D = 0.622$ . For 10 mol-% LiNO<sub>3</sub> in dioxane  $\eta = 0.0290$ ,  $\eta = 3.037$ ,  $\eta_{H_2O} = 3.01$ ,  $\eta = 1.790$  and  $\eta_D = 0.141$ . For a 81 mol-% LiNO<sub>3</sub>, 11.1 mol-% dioxane,  $\eta = 0.3348$ ,  $\eta = 2.704$ ,  $\eta_{H_2O} = 1.349$ ,  $\eta_D = 2.103$ , and  $\eta_D = 0.141$ . Qualitatively, the decrease in cond. can be explained by a decrease in the density const. and a decrease in the pure gradients of the 3 solvents.

KLOCHKO, M.A.; LUNEVA, Y.S.

Chemical and electrochemical dissolving of palladium in solutions  
of certain acids and salts. Izv.Sekt.plat.i blag.met. no.27:239-244  
'52. (MLRA 7:5)

(Palladium) (Solubility)

C^

The effect of Karaenggai Bay on alteration of salt balance in the Coopan Bay. M. A. Kharlamoff (1962) had noted N.S.S.R. S.E., 10th in 1962). From considerations of the known rate of flow of streams and rivers into the area, and from the analysis of the mineral content of the water therein, the flow of 7 cu. km of Coopan waters into the bay would suffice to lower the chloride content and the sum of mineral salts so as to prevent accumulation of salt. In acting as a salt-removing agent the bay over the period 60 years was held to have reduced the salt content of the sea by 0.1%, so that the present salinity of 1.30% would have been 1.4% had the bay been unconnected. (In reality speaking, however, the denitrating action of the bay is rather small, and is of interest mainly for theoretical considerations of stabilization of salinity in connecting bodies of water.) (1) M. Kharlamoff

RECORDED, I.A.

**USSR.**

*Relation between the composition of various electrical  
conductors and that of the eutectic point in eutectics  
of alkali metals with alkali halides.*

*Method of preparing salts of copper. In binary A-B  
series salt--metal the metal, molten or pass through a melt,  
at which the reagent, coexists (< than 1-2 mole %) with  
the compd. at the eutectic, if the salt forms cryst. hydrates.  
If the salt does not form cryst. hydrates, these compds. do  
not coexist.*

J. Rovtar Leach

KLOCHKO, M. A.

Physical Chemistry, Physicochemical Analysis (12494)

Izv. Sektora Fiz.-Khim. Analiza Inst. Otschek. i Neorgan. Khimii Akad. SSSR, Vol. 22, 1952  
pp 298-312

Klochko, M. A.; Uchurkhanov, E. N.

Investigation of the System Silver Perchlorate - Water by the Method of Physicochemical Analysis.

Studied the above system and determined its electrical conductivity, density, viscosity, and other physical properties.

SO: Referativnyy Zhurnal — Khimiya, No. 2, 1954 (W-30907)

KLOCHKO, M.A.; UCHURKHANOV, N.N.

Physicochemical study of the system silver perchlorate — acetone.  
Izv. Sekt. fiz.-khim. anal. 22:313-319 '53. (MLRA 7:5)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova  
Akademii nauk SSSR. (Silver perchlorate) (Acetone)

KLOCHKO, V. A.

Anodic behavior of silver-palladium alloys in *N* nitric acid.  
M. A. Kuchkin and L. S. Mironova. Izv. Akad. Nauk S.S.R. 23, 131-8 (1953).—  
Polarisation curves were obtained for Ag, Pd, and 7 of their  
alloys contg. 10-73% Pd. As the potential of the external  
circuit rose, the anodic potential first changed rapidly  
without changing the current; then, as either the anode  
began to dissolve or O started to be evolved on it, the cur-  
rent rose sharply while the potential remained the same.  
The polarisation curves formed 2 groups: (1) on Ag and  
alloys with up to 28% Pd, (2) Pd and alloys with more than  
28% Pd. Alloys with up to 28% Pd dissolved in *N* HNO<sub>3</sub>  
with current. Alloys with higher Pd content were passive.  
In the course of electrolysis an anodic sludge formed, the  
comps. of which was the same as that of the anode.

M. Hoch

KLOCHKO M.A.

*Micrographographic investigation of sludge from anodic solutions of silver-palladium alloys in normal nitric acid.*

M. A. Klochko, A. N. Khlyapova, and I. G. Malyutina,  
Ural'sk Institute of Radioelectronics, Akademicheskaya Street, 13,  
723941 (1959). — X-ray analysis of the anodic sludge formed  
during electrolytic smelting of Ag-Pd alloys showed it to  
be the same solid salts as the anode from which they formed.  
The sludge forms as a result of uneven dissolving of the sur-  
face of the anodes of which individual areas can have dif-  
ferent electrode potentials. In the course of electrolysis  
these areas fall off the anode, forming the sludge.

M. Ilowch

Investigation of the silver perchlorate system by  
the photothermal method of analysis

3 and 3.8 v. (greater 2 v.) Electrolysis of saline yields a  
finely cryst. dull ppt. of Ag.

F. S. Dug

fm fm  
part

5(2).  
AUTHOR:

Kloshko, M. A.

SOV/78-4-8-41/43

TITLE:

Symposium on the Chemistry of the Coordination Compounds in  
Agra (India). (Simposium po khimii koordinatsionnykh soyedinenii  
v g. Agra (Indiya))

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol. 4, No. 8,  
pp 1937-1939. (USSR)

ABSTRACT:

The symposium took place in February 1959. The following scientists from the USSR attended the symposium: Academicians A. N. Tarenin and S. I. Vol'fskevich, Ya.I. Gerasimov, Corresponding Member of the AS USSR, and M. A. Kloshko, A.S. Katal'mikova, N. N. Lyashenko, L. A. Manzava, G. V. Shavashenko and Ye. V. Shendzatakaya, scientific collaborators of the Institut obshchey i neorganicheskoy khimii im. M. S. Kurnakov AM SSSR (Institute of General and Inorganic Chemistry imeni M. S. Kurnakov of the AS USSR). A report is given on the scientific institutes of India and the lectures heard. Eastern scientists delivered the following lectures: A. N. Tarenin: "Infrared Spectra of Molecular Compounds of Metallic Halides"; Ya. I. Gerasimov: "The Influence Exercised by the Crystal Structure on the Thermo-dynamical Properties of Tungstic Oxides With Variable

Card 1/2

SOV/78-4-8-41/43

## Symposium on the Chemistry of the Coordination Compounds in Agra (India)

Coordination Number" and Doctor L Sommer (Czechoslovakia) on  
the analytical application of some complex compounds of the  
polyphenols.

Card 2/2

Klochko, M.A.  
APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000723210006-0  
USSR / Theory of Solids. Geometrical Crystallography.

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9154

Author : Klochko, M.A.

Title : Connection Between the Coordination Numbers and Complex  
Compounds and the Number of Vertices of Regular Convex  
Polyhedra.

Orig Pub : Izv. Sektora platiny AN SSSR, 1955, vyp. 29, 133-140

Abstract : Starting with the assumption that the activity of the cen-  
tral atom in the complex is spherically symmetrical, the au-  
thor calculates the possible coordinate numbers as the num-  
bers of the vertices of regular convex polyhedra, inscribed  
in a sphere, in whose center the central atom (ion) is loca-  
ted. The fundamental coordination numbers are 4, 6, 8, 12  
and 2. Coordination numbers 5, 7, 9, 10 and 11 have low  
probability, and are hardly ever observed in practice. The  
coordination number 3 corresponds to the placement of the  
substitutes in one plane.

Card : 1/1

160

the acidic behavior and potentials of acidic aqueous

alloys. M. A. Kuchta and V. R. Kulkarni. J. Non-

Metal Mater. 1989, Vol. 27, No. 1, p. 107-112.

Yong Kim, Akad Nam. S.S.E. 29, 107 (1981).

The acidic and the basic and the intermediate regions of the

curve. Acidic systems were studied over the entire pH range and in the annealed as well as quenched state. The

nature of the complex-potentiometric curve in the intermediate

region was anomalous and it was observed that the

regions of the existence of other species were

overlapped. The straight line was obtained in the

acidic range. In the intermediate range, the linear

range was the best fit. The freedom of the

alkalis in the heterogeneous range had the minimum free

enthalpy value at  $pH = 7.5$ . At this point the

~~Experiments carried out by us and solution of silver 4E3~~

We have given the following  
AgCl of H<sub>2</sub>O<sub>2</sub> and Ag  
the last named is the  
used to decrease  
at concn. 1 to 5% and 5  
to 10% mho/cm.

(H.W.)

KJOCERU, F. A.

Study of corrosion-fatigue effects by electrochemical methods. M. V. Korchagin and M. B. Mironova. *Izvest. Sibirsk. Politekhn. Inst., Novosibirsk*, No. 3, 1963, p. 31-35. Cu-Pd alloys with 0-10% Pd were prep. from electrolytic Cu and sponge Pd. Impurities did not exceed 0.1%. A portion of the alloy was directly hardened from 900° in cold H<sub>2</sub>O, and a portion was annealed starting at 600° for 48 hrs, and ending at 180° for 24 hrs. On both the annealed and hardened specimens, Brinell hardness was determined. The e.m.f.s. of a series of specimens were determined in a cell Cu/Na<sub>2</sub>SO<sub>4</sub>/Cu-Pd. This was done after 1, 2, and 3 anneals. Repeated annealing changed the shape of the curve, compn. vs. e.m.f. Furthermore, the e.m.f. was determined with annealed and hardened specimens in CuSO<sub>4</sub> and in HCl. Also studied was the anodic arm. of the alloys in CuSO<sub>4</sub> + H<sub>2</sub>SO<sub>4</sub>, 2N H<sub>2</sub>SO<sub>4</sub>, and 2N HCl. All alloys dissolved in HCl. In H<sub>2</sub>SO<sub>4</sub> and CuSO<sub>4</sub> + H<sub>2</sub>SO<sub>4</sub> self alloys with up to 25 at. % Pd dissolved. M. Il'inskii

KLOCHKO, M.A.; KURBANOV, M.Sh.

Use of physicochemical analysis in the study of the system : phosphoric acid - water. Izv.Sekt.fiz.-khim.anal. 24:252-263 '54.  
(MIRA 8:4)

1. Institut obshchey i neorganicheskoy khimii im.N.S.Kurnakova  
Akademii nauk SSSR;  
(Phosphoric acid)

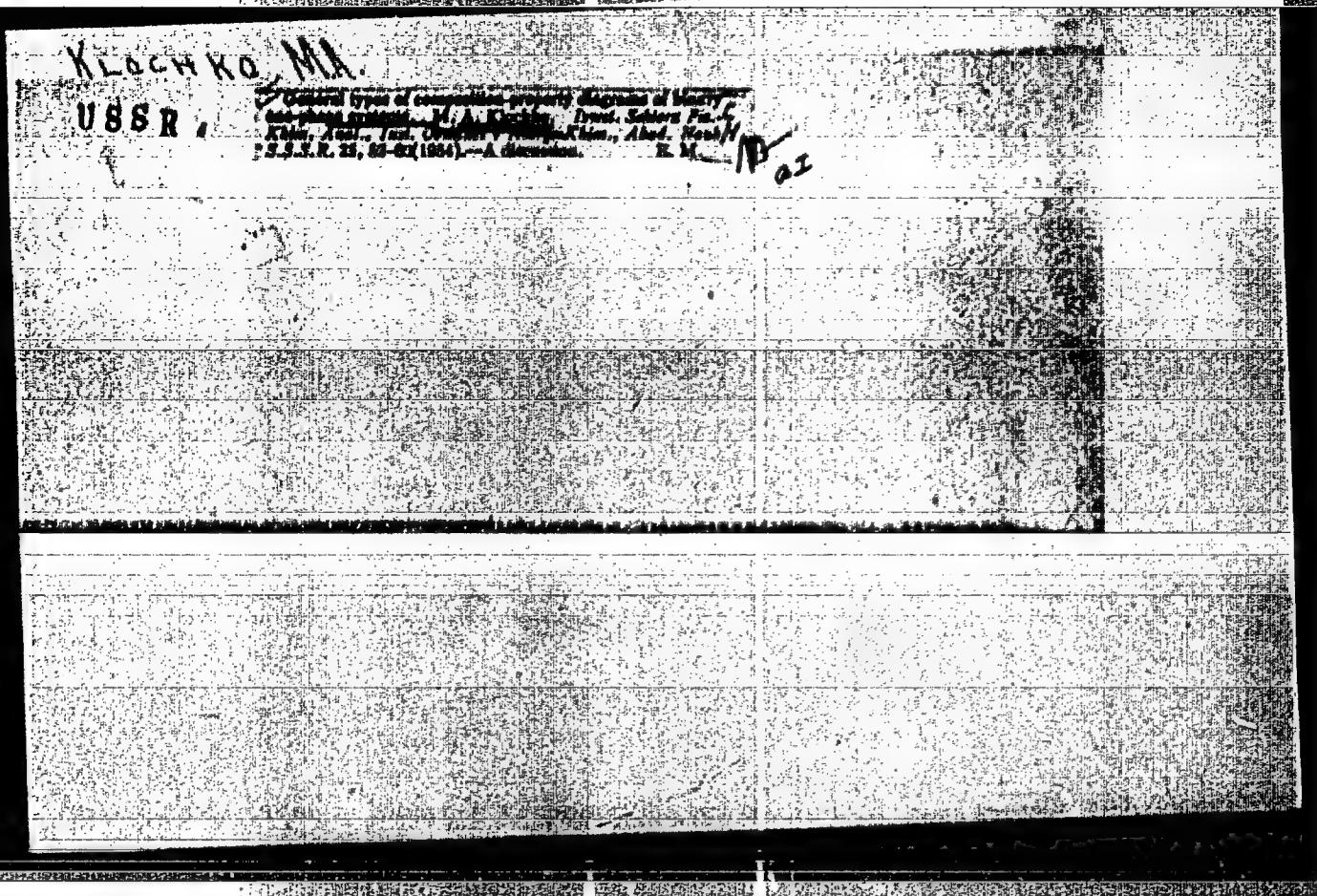
KLOCHKO, M.A.; KURBANOV, M.Sh.

Use of physicochemical analysis in the study of the system: sulfuric  
anhydride - water. Izv. Sekt.fiz.-khim.anal. 24:264-276 '54.  
(MIRA 8:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova  
Akademii nauk SSSR.  
(Sulfur trioxide)

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KLOCHIO, M.A.; MIRONOVA, M.Ye.

Anodic solution of copper -- sulfur alloys. Izv.Sekt.fiz.-khim.anal.  
no.25:128-133 '54. (MLRA 8:5)

1. Institut obshchey i neorganicheskoy khimi im. N.S.Kurnakova  
Akademii nauk SSSR.  
(Copper-sulfur alloys)

~~G. KLOCHKO, M. A.~~

GRINBERG, A.A. (Leningrad); BABAYEVA, A.V. (Moscow); YATSIMIRESKIY, K.B.  
(Ivanovo); GOREMYKIN, V.I. (Moscow); BOLIY, G.B. (Moscow); PIAL-  
KOV, Ya.A. (Kiev); YAESHIN, M.M. (Moscow); KEDROV, B.M. (Moscow);  
OKL'MAN, A.D. (Moscow); FEODOROV, I.A. (Moscow); MAKSYMUK, Ye.A.  
(Leningrad); VOL'KEMSHTEYN, M.V. (Leningrad); ZHDANOV, G.S. (Moscow);  
PTITSYNE, B.V. (Leningrad); ABLOY, A.V. (Kishinev); VOLZHTSEV, L.M.  
(Dnepropetrovsk); TROITSKAYA, A.D. (Kazan'); KLOCHKO, M.A. (Moscow);  
BABAYEVA, A.V.; TROKOV, V.G. (Moscow); RUBINSHTEYN, A.M. (Moscow)  
CHENYAYEV, I.I.; GRINBERG, A.A.; TAKHATEV, I.V.

Explanation of the transeffect. Izv. Sekt. plat. i blag. met. no.28:  
56-126 '54. (MLRA 7:9)  
(Compounds, Complex) (Platinum)

KLOCHKO M.A.

USSR

Anodic behavior of silver-lead alloys in normal nitric acid

M. A. Klochko and Z. S. Matrosova. Izv. SSSR o

tekhnicheskikh naukach, Ser. R., 28, 210-7 (1984); S. C. I.

Chem., 1984, No. 1, p. 15; S. S. R., 28, 210-7 (1984); S. C. I.

AB, 1984, No. 1, p. 15. The anodic behavior of Ag, Pb, and 14 inter-  
mediate alloys in  $N\ HNO_3$  at room temp. and a c.d. of 1.5  
mA./sq. cm. was studied. All alloys were anodic at 1.  
B.m.f. curves of Ag-Pb alloys in  $N\ Pb(NO_3)_2$  and  $N\ HNO_3$   
had a sharp break at 3.3% Pb, indicating limit of solid sol.  
H. W. Rathman

KLOCHKO, M.A.

USSR.

Anodic behavior of palladium-based alloys in normal nitric acid  
held. V. A. Klochko and Z. S. Medvedeva. Issled.  
Tekhnicheskaya i Stroiteльnaya Metal. i Obraze  
Nauk. Chim. Akad. Nauk SSSR, 29, 266-72 (1961);  
C.A. 48, 66442d. — The anodic behavior of Pd, Pb, and Pd-  
alloy contg. 5.0, 21.3, 25.1, 26.6, 35.8, and 44.0 wt. % Pd  
was studied in *N* HNO<sub>3</sub> at room temp. and at c.d. of 25  
mA./sq. cm. Alloys contg. 5.0-36.8% Pd dissolved in *N*  
HNO<sub>3</sub>. E.m.f. curves in *N* Pb(NO<sub>3</sub>)<sub>2</sub> and *N* HNO<sub>3</sub> had a  
break at 21.3% Pd, corresponding to the compnd. Pb<sub>2</sub>Pd.

KLOCHKO, N.A.

USSR

Anodic behavior of palladium in hydrochloric acid. M.

Marchet, I. Neogi, A. Bini, G. D'Amato, M. V. Nizzoli  
(March 1, 1969). Atti Accad. Naz. Lincei, VIII, 20, 274-6  
(1969). Anodic behavior of Pt in 0.1, 0.5, 1, 2, and 3 N  
HCl at room temp. was studied. Pt was passive in 0.1 and  
0.5N HCl and active in 1.5, and 3N HCl. A polarographi-  
cal of Pt were measured at various conc. J. W. R.

KLOCHKO, M.A.

Sergei Aleksandrovich Pogodin; on the 60th anniversary of his birthday.  
Inv.Sekt.fis.-khim.anal. 26:5-13 '55.  
(Pogodin, Sergei Aleksandrovich, 1894- )  
(Bibliography--Chemistry)

KLOCHKO, M.A.

✓ Anodic behavior of alloys of palladium-silicon. M. A. KLOCHKO and M. V. Mironova. Izv. Akad. Nauk SSSR, Ser. Khim., No. 7 (1965). - Anodic tests of alloys of Pd and Si in 2N H<sub>2</sub>SO<sub>4</sub> produced a large proportion of silane. Raising current yield of silane and increased amt. of Pd and Si going into soln. Anodic tests in 2N H<sub>2</sub>SO<sub>4</sub> at an anodic c.d. of 500 amp./sq. cm. showed 55-65% of Si found in the anode to be oxidized and admitted into the electrolyte. Yield of silane represented 20-30% of anodic loss, whereas the silane contained a lower percentage of Si than the anode. Pd and Si alloys had a greater anodic potential than did pure Pd. This was explained by the greater ease of transition of Pd into the electrolyte in the form of ions in comparison to decom pos. of a sulfide and oxidation of Si (1800 m.v.). V. N.

(1)

Inst. Gen. & Inorg. Chem. im N. S. Kurnakov  
A.S. USSR

KLOCHKO, M. A.

Voltaic behavior of a triple alloy of copper, palladium, and silver. M. A. Klochko and M. B. Minova. Sov. Selskove Promst. Akad. Nauk SSSR, 28, 76-81 (1965).—Triple alloys of Cu, Pd, and S formed considerable amounts of anodic alumina in electrolysis in 2N HCl approaching 78% of anode loss with anode const. 1.3-1.4% S and 41% loss with anode const. 11-20% S. Cu and Pd dissolved first, the sulfides essentially entering the anode. Current yield was 46-70% for alloys contg. up to 1.1% S and nearly 100% for S contents over 11.57%. Potentials of triple alloys in HCl changed little with current, and at a c.d. of 200 amp./sq. m., changed little with time of electrolysis. At 200 amp./sq. m. the potential rose 1 v. at the end of the expt. The potential of these alloys in HCl was close to that of Cu. Some alloys contg. 18-20% S stratified in the liquid state and formed inside the larger anode constg. 9-6% S. V. M. B.

C4

(1)

KLOCHKO, M. A.

✓ Anodic behavior of alloys of palladium and nickel. M. A. Kirchko and Z. S. Medvedeva. *Izv. Akad. Nauk SSSR, Ser. Fiz.* 26, 25-30 (1962).<sup>CH</sup> The anod. and cathode behavior of pure Ni and Pd and their alloys was determined in Ni-NaCl solns., in  $HNO_3$ , and in HCl. It was established that the relations of anod. and anodic potential of unalloyed alloys of Ni and Pd to their content, corresponded to the change of these properties in a continuous series of solid solns. In  $HNO_3$ , the alloys were passive but were anodically act. in HCl.  
V. N. Bednarek

(1)

KLochRo, M. D.A.

The anodic oxidation and polarization of the ~~solid-state~~  
copper alloys. M. S. Kharlamov and V. N. Novikov  
Solvay Plastics & Fibers Research Institute  
Nauk. Khim. Akad. Mat. S.S.R. 29, 207-23 (1953).  
The electrode polarisability, anodic reaction rate and the  
polarization curves of the Pt-Cu alloy system were measured  
over the whole range of composition both in the annealed  
and quenched states. The nature of changes in  
polarization curves (in 5M HCl) and their influence on  
CuSf<sub>2</sub> soln depended strongly on the presence of Cu<sub>2</sub>S.  
Oxidation in the solid state was studied with the help of  
compounds from a common reaction system of Cu and Pt. The  
min. found on copper by current and atomic absorption  
the elements PtCu and PtCu<sub>2</sub>. This was due to the fact that  
all of these elements were the furthest removed from the  
equil. state, and therefore had a max. free energy in comparsion  
with the annealed alloys of the same composition which  
were true chem. crystals. The difference in the rate of elec.  
oxidation in the quenched and annealed states of the Cu-Pt  
compd. in 5M HCl reached 500 m.v. The nature of anodic  
oxid. was not affected by the thermal treatment. Under the  
influence of the elec. current, in electrolyzing 6.5% Pt  
primarily oxidized the soln. In the middle part of the elec.  
zone, with a Pt content between 20 and 40%, the trend of  
polarity had the character of the alloy. Alloys with 40-60%  
Pt were almost black. The electrode potential measurements  
permitted the detection of chem. compds. present in  
continuous series of solid solutions at lower temps. and also  
in untreated samples but equally easily in quenched  
samples.

W. M. R.

3

KLOCHKO, M.A.

Congress of Austrian and German chemists in Salzburg. Zhur. neorg. khim., 1 no. 10:2430 O 56.  
(NIIKA 10:1)  
(Salzburg--Chemistry--Congresses)

KLOCHKO, M.A.

Conferences of Austrian and German chemists. Inv. AN 533R. Od. Khin.  
rank no. 11: 1426-1428 N '56. (MIRA 10:3)  
(Salzburg-Chemistry-Conferences)

KLOCHKO, M.A., doktor khimicheskikh nauk.

Conference of Austrian and German chemists. Vest. AN SSSR  
26 no.10:78-79 O '56. (MLRA 9:11)

(Salzburg--Chemistry--Congresses)

"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723210006-0

Klochko, M.A.

Change of the ionic conductivity of the lead  
chemical compounds and systems with temperature

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000723210006-0"

KLOCHKO, M.A.

WORKS of N.N.ERFEMOV in the field of electrochemistry. Izv.3ekh.  
fiz.-khim.anal. 27:28-29 '56. (MRA 9:9)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova  
AN SSSR.  
(Electrochemistry) (Efremov, Nikolai Nikolaevich, 1886-1947)

KLOCHKO, M.A.

USSR/Physical Chemistry - Solutions.  
Theory of Acids and Bases

B-11

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3899

Author : Klochko M.A.

Inst : Institute of General and Inorganic Chemistry, Academy of  
Sciences USSR

Title : Changes in Electrolytic Conductivity of Individual  
Liquids and Solutions Depending on the Temperature.

Orig Pub : Izv. Sektora fiz.-khim. analiza IOMK: AN SSSR, 1956, 27,  
50-74

Abstract : Subdivision of electrolytes into strong and weak is of  
limited utility. A more general subdivision is that of  
autolytes, which conduct the current in the liquid state,  
and heterolytes, which conduct the current only in  
solutions of suitable substances. The existing theories  
do not take into account the influence, upon conductivity,  
of thermal motion. In order to take this into

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KLOCHKO, M. A.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibrium, Physico-Chemical Analysis, Phase Transitions B-8

Abs Jour : Referat Zhur. Khimiya, No 2, 1957, 3729

Author : Klochko M.A., Medvedeva Z.S.

Inst : INSTITUTE OF GENERAL AND INORGANIC CHEMISTRY, ACADEMY OF SCIENCES USSR

Title : ELECTROCHEMICAL INVESTIGATION OF SILVER-TELLURIUM ALLOYS

Orig Pub : Izv. Sektara fiz.-khim. analiza ICMKh, AN SSSR, 1956, 27, 133-140.

Abstract : Electrochemical investigation of eight Ag-Te alloys, over the component concentration range from pure Ag to 37.4% by weight Te, corresponding to the composition of the compound Ag<sub>2</sub>Te. Electrolysis was carried out in 1 N AgNO<sub>3</sub> acidified with 0.1 N solution of HNO<sub>3</sub>, with determination of electrode potential by comparison with a saturated calomel electrode. Investigated were the products of electrolysis -- sludge, electrolyte,

Card 1/3

- 75 -

Klochko, M.A.

81-2-3759

Translation from: Referativnyy Zhurnal, Khimiya, Nr 2, p. 51 (USSR)

AUTHORS: Klochko, M.A., Gubskaya, G.P.

TITLE: Electric Conductivity and Viscosity of the System  
Ammonium Nitrate-Acetamide (Elektroprovodnost' i  
vyazkost' sistemy nitrat ammoniya - atsetamid)

PERIODICAL: Izv. Sektora fiz.-khim. analiza IONKh AN SSSR, 1956, 27,  
pp. 393-401

ABSTRACT: Electric conductivity, viscosity, and density of the system  $\text{NH}_4\text{NO}_3$  (I) -  $\text{CH}_3\text{CONH}_2$  (II) have been investigated at 75, 125, and 175°C. It was found that variation in the conductivity is expressed by a marked rise, up to 25-30 mol.% of I on the 125 and 175°C isotherms which corresponds to the hypoeutectic area on the state diagram. In the hypereutectic area the isotherms have a sloping shape. The viscosity curve for 175°C is slightly convex to the axis of the compound. The density values change almost linearly, increasing from II to I. The conductivity temperature coefficients are hardly affected by

Card 1/2

*Klochko, M. I.*

USSR/Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical B-8  
Analysis. Phase Transitions

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26162

Author : M.A. Klochko, G.F. Gubskaya

Title : Electrical Conductivity and Viscosity of System Ammonium  
Nitrate - Water.

Orig Pub : Izv. Sektora fiz.-khim. analiza IONKh AN SSSR, 27, 402-411, 1956

Abstract : The electrical conductivity, density and viscosity of so-  
lutions of the system  $\text{NH}_4\text{NO}_3$  (I) -  $\text{H}_2\text{O}$  were measured at 25,  
75 and 125° and the temperature factors of these proper-  
ties were computed. The conductivity curves pass through  
a maximum at 18 to 20 mol. % of I. A shift of the maximum  
towards greater concentrations of I is observed at the tem-  
perature rise. Viscosity rises sharply with the rise of  
the I content in the solution. The curves of the temperature  
factors of conductivity pass through a minimum, and those of  
the viscosity pass through a maximum corresponding to the  
composition with the conductivity maximum which does not coin-  
cide with the eutectic composition. The appearance of the

Card : 1/2

*Inst. Gen. Inorganic Chem. em N.S. Kurnakov*

KLOCKHOFF M.A.

Distr: 4E4, 4E2c

Electrochemical behavior of gold-copper alloys 47  
Klostermann and V. K. Mehta, *J Am Inst Min Eng* 200, 603 (1957), cf CIA 50, 9640 - The electrode potentials (E<sub>0</sub> m.v. anodic only) and the polarization curves of Au-Cu alloys water quenched from 800° and others cooled at the rate of 150°/day to 600° and held at this temp. 3 days were determined. The E vs. compn. curves in 5N HCl and the E vs. compn. curves in 5% CuSO<sub>4</sub> showed deep minima which in quenched alloys were attributed to higher free Cu than compared with those in annealed alloys. These minima corresponded to the compositions of the compounds AuCu<sub>3</sub>, Au<sub>3</sub>Cu<sub>2</sub>, and Au<sub>2</sub>Cu. In alloys containing from 1 to 30% Au, the Cu dissolved preferentially. Only Cu was present from AuCu<sub>3</sub>. With alloys containing from 40 to 60% Au, the proportion of Cu in the solid was twice that in the initial alloy. In alloys containing from 60 to 100% Au, the composition of the solid approached that of the alloys. 1. Beagle 11

4  
2

KLOCHKO, M.A.  
KLOCHKO, M.A.; MIRONOVA, M.Ye. [deceased]

Studying anodic dissolution and potentials of copper-selenium  
alloys. Zhur.neorg.khim. 2 no.9:2235-2238 8 '57. (MIRA 10:12)  
(Copper-selenium alloys) (Electrolysis)

Klochko, M. V.  
KLOCHKO, M.A.

Maria Efimovna Mironova; obituary. Zhur. neorg. khim. 2 no. 9:2239  
8 '57. (MIRA 10:12)  
(Mironova, Maria Efimovna, 1904-1957)

## AUTHORS:

Klochko, M. A., Gubskaya, G. P.

S07/78-3-10-24/35

## TITLE:

Investigation of the System Lithium Nitrate - Acetamide  
(Issledovaniye sistemy nitrat litiya-atsetazida)

## PERIODICAL:

Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 10, pp 2375-2381  
(USSR)

## ABSTRACT:

The system lithium nitrate - acetamide was investigated by the determination of the conductivity, viscosity and density, as well as by thermal analyses in order to ascertain the character of the chemical interaction between the components of the system. It can be seen from the phase diagram of  $\text{LiNO}_3\text{-CH}_3\text{CONH}_2$  that two compounds are formed in this system, which are  $\text{LiNO}_3\cdot 2 \text{CH}_3\text{CONH}_2$  and  $\text{LiNO}_3\cdot \text{CH}_3\text{CONH}_2$ . The first eutectic point lies between 15-16 mol % lithium nitrate and 140°C. The conductivity was investigated in this system at 75, 125, 175 and 225°C. A maximum occurs in the isothermal lines at 75, 175 and 125°C. The viscosity and density were investigated in the temperature range of from 75 to 175°C. Some solutions have a considerable viscosity. The absolute value of the temperature coefficient of

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SO7/78-3-10-24/35

Investigation of the System Lithium Nitrate - Acetamide

conductivity is slowly increased. The isothermal lines of conductivity belong to the type 8, according to M. A. Klochko's classification. The eutectic area corresponds to the maximum of the isothermal lines of conductivity.  
There are 7 figures, 5 tables, and 5 references, 5 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

SUBMITTED: August 3, 1957

Card 2/2

AUTHORS:

Klochko, M. A., Gubskaya, G. F.

SOV/78-3-11-22/23

TITLE:

The Conductivity and Viscosity of the Systems From Eutectic Mixtures of the Lithium- and Ammonium Nitrate With Acetamide or Water (Provodimost' i vyazkost' sistem iz eutekticheskoy smesi nitratov litiya i amoniya i atsetamida ili vody)

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 11, pp 2571-2581  
(USSR)

ABSTRACT:

The conductivity, viscosity, and density of the system lithium nitrate-ammonium nitrate was investigated at 125 and 175°C, and the property diagram of the system was constructed. The viscosity of the system increases with the increase in concentration of the higher melting component. The density changes almost linearly. The course of the conductivity curves shows that the conductivity curve of this system belongs to the type III. The system of the eutectic composition of lithium nitrate-ammonium nitrate-acetamide was investigated and plotted on the ternary diagram. The liquidus curve of the ternary system investigated consists of three parts. From the course of the conductivity isothermal lines may be concluded that the system ammonium nitrate-acetamide belongs to the second class according

Card 1/2

SOV/78-3-11-22/23

The Conductivity and Viscosity of the Systems From Eutectic Mixtures of the  
Lithium- and Ammonium Nitrate With Acetamide or Water

to the classification by M. A. Klochko. No great change of the  
volume occurs in the case of a formation of solid mixtures  
from the components in the ternary system lithium nitrate-  
ammonium nitrate-acetamide. The viscosity and density of the  
eutectic mixture lithium nitrate-ammonium nitrate-water was  
investigated.

There are 13 figures, 11 tables, and 19 references, 10 of which  
are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova  
Akademii nauk SSSR (Institute of General and Inorganic Chemistry  
imeni N. S. Kurnakov, AS USSR)

SUBMITTED: August 3, 1957

Card 2/2

KLOCHKO, M.A.

Conductivity of individual electrolytes and systems. Itogi nauki: Khim.nauki 4:6-47 '59. (MIRA 13:4)  
(Electrolytes--Conductivity)

5(2)

AUTHORS: Klochko, M. A., Gubskaya, G. F.

SOV/78-4-3-29/34

TITLE: On the Compounds of Lithium Nitrate With Acetamide  
(O soyedineniyakh nitrata litiya s atsetamidom)PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 3,  
pp 684-687 (USSR)

ABSTRACT: The crystallization of the compound  $\text{LiNO}_3 \cdot \text{CH}_3\text{CONH}_2$  from various solvents, e. g. acetone, benzene, ethyl alcohol, ether, and methyl alcohol was investigated. The compound can be crystallized in pure state and as uniform crystals only from acetone solution. In water at 25° the solubility of this compound amounts to 70.91 wt %. The compound is practically insoluble in benzene and nitrobenzene. The flat rhombic crystals have the following refraction indices:  $N_1=1.57-1.59$  and  $N_2=1.450$ . It was not possible to isolate the compound  $\text{LiNO}_3 \cdot 2\text{CH}_3\text{CONH}_2$  in pure form from acetone, methyl alcohol, and ethyl alcohol. The existence of this compound was only found by thermal analysis, determination of the electric conductivity, and microscopic investigation. There are 1 figure, 2 tables, and

ODNEVA, M.M.; KLOCHKO, M.A.

Limits of homogeneity in water-dioxane and water-acetone systems  
with lithium, sodium, or potassium hydroxides at temperature of  
25 and 75°. Izv.Kar. i Kol. fil. AN SSSR no.5:122-129 '58.  
(MIRA 1219)

1. Institut khimii i tekhnologii redkikh elementov i mineral'-  
nogo syr'ya Kol'skogo filiala AN SSSR.  
(Systems(Chemistry))

5(2)

AUTHORS:

Klochko, M. A., Godneva, M. M.

SOV/78-4-9-32/44

TITLE:

The Study of the Electroconductivity and Viscosity of Aqueous  
Solutions of the Hydroxides of Sodium and Potassium

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2127-2135  
(USSR)

ABSTRACT:

The numerous publications on the electroconductivity of solutions (Refs 1-18) contain only few data regarding electroconductivity in the case of higher concentrations and temperatures. The research workers mainly dealt with diluted solutions at low temperatures, among them M. I. Usanovich and T. N. Sushkevich (Ref 13), P. M. Korotkov and N. N. Sokolov (Ref 11), G. L. Kobus (Ref 14), M. G. Manvelyan (Ref 15), A. P. Skryshevskiy, A. V. Romanova, and V. I. Danilov (Ref 18). In some solvents there is a particular conductivity mechanism, e.g. if the components of a system possess common ions but differ with regard to the degree of dissociation. In aqueous solutions of acids and bases there is to be found, besides the transfer of electricity by the movement of ions along the lines of force of the field, yet another migration mechanism which causes the great mobility of the H<sup>+</sup> and OH<sup>-</sup> ions. In order to investigate the part played by water

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The Study of the Electroconductivity and Viscosity      SOV/78-4-9-32/44  
of Aqueous Solutions of the Hydroxides of Sodium and Potassium

in regard of this phenomenon the field of the transition from the pure molten electrolyte to compositions with a low water content had to be studied. It is intended to use an equimolar NaOH and KOH mixture melting at 170°. For the time being, however, an account of the measurement of the conductivity and viscosity of the two above components between 25 and 200° is given. The results are summarized in tables 2-7 and figures 3-7. The different conductivities of the aqueous solutions of the alkali hydroxides are due to the radius of the cation and the hydration. The small lithium ion is inhibited in its speed by a large hydrate shell. In melts and highly concentrated solutions hydration is limited, and the smaller ion reaches its respective greater velocity than a larger ion with the same charge. This change in hydration accounts for the fact that the conductivity  $\kappa_{\text{NaOH}}$  becomes greater at high temperatures than  $\kappa_{\text{KOH}}$ . The temperature coefficients of the viscosity  $\eta$  and conductivity  $\kappa$  change homologously (Fig 5),

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The Study of the Electroconductivity and Viscosity      SOV/78-4-9-32/44  
of Aqueous Solutions of the Hydroxides of Sodium and Potassium

which also suggests a close connection between these properties. The polytherms of conductivity (Fig 6) become steeper as the concentration increases, which is due to the greater viscosity. A temperature increase is accompanied by a homologous drop of the product  $\kappa\eta$ . (Fig 7). There are 7 figures, 6 tables, and 23 references, 15 of which are Soviet.

SUBMITTED: January 17, 1959

Card 3/3

5(2)

AUTHORS: Klochko, M. A., Godneva, N. M.

SOV/70-4-9-33/44

TITLE: Electric Conductivity and Viscosity in the Transitional Region  
of the Melt of Sodium and Potassium Hydroxide and Their Aqueous  
SolutionsPERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2136-2142  
(USSR)

ABSTRACT: The melting point diagram of the system mentioned in the title (Fig 1) was investigated, inter alia, by V. A. Khitrov (Ref 4), G. M. Unzhakov (Ref 5), and N. A. Reshetnikov and G. M. Unzhakov (Ref 6). The authors had pointed to the role played by water in the so-called migration mechanism in connection with the investigation of concentrated aqueous solutions of hydroxides (Ref 1). This effect is now being investigated in the range of transition from the solution to the melt. An equimolar mixture of NaOH and KOH proved most favorable for such an investigation, since it melts at as low a temperature as 170°. For the purposes of this abstract this mixture will be referred to below as MeOH( =  $\frac{\text{NaOH} + \text{KOH}}{2}$ ). The measurement of the electric conductivity

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Electric Conductivity and Viscosity in the  
Transitional Region of the Melt of Sodium and Potassium Hydroxide and Their  
Aqueous Solutions

SOV/78-4-9-33/44

has already been described (Ref 1). The measurement of the viscosity was carried out at 125° by glass or quartz viscosimeters. For higher temperatures the method developed by R. S. Dantuma (Ref 7) proved impracticable on account of the formation of a crust. For this reason the rotation - vibration viscosimeter by Ye. G. Shvidkovskiy (Ref 8, Fig 2) was used. The results are shown in tables 1-3 and figures 3-9. (Table 1: electric conductivity of the system MeOH - water; Table 2: viscosity and density of this system; Table 3: temperature coefficient  $\alpha$  of the conductivity and temperature coefficient  $\beta$  of the viscosity as well as their relationship  $\beta' = \frac{\alpha}{K}$  ).

As is seen from figure 3, the conductivity  $K$  of the solution passes through a maximum as the ion concentration increases, and then drops. Since, however, the descending branches are higher when the temperature is higher, it is assumed that there is a connection with viscosity  $\eta$  (Fig 4) and therefore a correction is made by the product  $K\eta$  (Fig 5). The maxima of the  $K\eta$  isotherms are attributed to the effect of the migration mechanism. At an increasing concentration the conductivity of the

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Electric Conductivity and Viscosity in the  
Transitional Region of the Melt of Sodium and Potassium Hydroxide and Their  
Aqueous Solutions

SOV/78-4-9-33/44

NaOH solutions exceeds that of the KOH solutions. This is attributed to the greater mobility of the Na ion due to the reduced hydration. The values for NaOH lie between those of NaOH and KOH. The conductivity of the electrolytes decreases as the temperature rises, which becomes apparent if the viscosity is not much influenced by temperature. M. A. Klochko explains this tendency toward a reduction of conductivity as a consequence of the increasing heat motion of the ions. There are 9 figures, 3 tables, and 14 references, 11 of which are Soviet.

SUBMITTED: January 17, 1959

Card 3/3

5(2)

S07/78-4-10-27/40

AUTHORS: Klochko, M. A., Godneva, M. M.  
TITLE: Electric Conductivity and Viscosity of Solutions of Lithium-,  
Sodium- and Potassium Hydroxide in Water - Dioxane Mixtures

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10,  
pp 2347 - 2353 (USSR)

ABSTRACT: Previous investigations (Refs 1,2) dealt with the electric conductivity and viscosity of aqueous solutions of NaOH and KOH and of their mixtures in order to determine both the influence exerted by concentration and temperature upon the migration mechanism of the ions and the concentration at which the inversion of conductivity of the K and Na ions occurs, i.e. at which the latter become more mobile than the potassium ions owing to the loss of the hydrate shell. Now the influence exerted by a non-aqueous component (dioxane) upon these processes is investigated. The system water - dioxane has been repeatedly investigated, also with respect to its conductivity  $K$  (Refs 1-12, 14). In the experiments pure anhydrous dioxane was used and in the device according to P. P. Pugachevich (Ref 15) distilled water. The results are summarized in tables 1-4 and figures 2 and 3. If a part of the water molecules is replaced by dioxane, the conductivity decreases without any change of viscosity. This decrease is due to the missing of the migration mechanism of the ions as can also be seen from

Card 1/2

Electric Conductivity and Viscosity of Solutions of      Sov/78-4-10-27/40  
Lithium-, Sodium- and Potassium Hydroxide in Water - Dioxane Mixtures

a comparison of the conductivity of KCl with KOH (Table 4).  
The maximum of viscosity at a dioxane content of 17-25 mole%  
indicates the formation of dioxane hydrates. The substitution  
of dioxane for water changes the hydration of the ions in a way  
that at 50 mole% inversion takes place and  $K_{KOH} < K_{KCl}$ .  
There are 3 figures, 4 tables, and 16 references, 11 of which  
are Soviet.

SUBMITTED: January 17, 1959

Card 2/2

5(2)

SOV/78-4-10-28/40

AUTHORS: Klochko, M. A., Godneva, M. M.

TITLE: Electric Conductivity and Viscosity of Solutions of Lithium-, Potassium- and Sodium Hydroxide in Water - Acetone Mixtures

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 10,  
pp 2354 - 2359 (USSR)

ABSTRACT: The effect of a non-aqueous solvent on hydration and migration mechanism of the electric conductivity of alkali hydroxides is investigated. The electric conductivity of electrolytes in water - acetone mixtures was also studied by S. V. Serkov (Ref 5). As can be seen from table 1 and figures 1 and 2, the electric conductivity decreases with increasing acetone content. The conductivities of KOH and NaOH approach to each other at increasing acetone content and increasing temperature, but more slowly than in water - dioxane mixtures. At 50 mole% acetone only the conductivities of NaOH and KOH are equal. The dehydrating property of acetone is less than that of dioxane, accordingly, and the elimination of the migration mechanism is attained more slowly. There are 4 figures, 3 tables, and 7 references, 5 of which are Soviet.

SUBMITTED: January 17, 1959  
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11.137<sup>b</sup>  
8/07/60/005/010/015/021  
B004/B067

AUTHORS: Klochko, M. A., Mikhaylova, M. P.

TITLE: Thermal Analysis of Systems Formed From Hydrazine With Acetone, Sulfur, and Lithium Chloride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 10,  
pp. 2319-2324

TEXT: The authors describe an investigation of the electrical conductivity of systems, one component of which is hydrazine. To determine the conditions under which the components form homogeneous liquid phases, they studied the binary systems hydrazine - acetone, hydrazine - sulfur, hydrazine - hydrogen sulfide, and hydrazine - lithium chloride by thermal analysis. The system hydrazine - acetone was studied in the entire concentration range (Table 1, Fig. 1). Compound  $N_2H_4 \cdot 2(CH_3)_2CO$  with the melting point at  $-37.8^{\circ}C$  is formed. The crystallization temperature of the eutectics could not be exactly determined due to the high viscosity of the solutions. In the system hydrazine - sulfur (Table 2, Fig. 2), X

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compound  $N_2H_4S$  (melting point +15.0°C) is formed. The system has two eutectics, one at 33 mole% S (melting point -78.0°C) and the other at 65 mole% S (melting point -23.3°C). Since hydrogen sulfide is formed when adding sulfur to hydrazine, also the system  $N_2H_4 - H_2S$  was studied (Table 3, Fig. 3). Crystals having the composition  $3N_2H_4 \cdot 2H_2S$  are formed; they may be conserved only in  $H_2S$  atmosphere, and melt at +44.5°C. A  $H_2S$  content higher than 41.6 mole% could not be obtained in this system. The eutectic with 21.0 mole%  $H_2S$  melts at -38.0°C. The system  $N_2H_4 - LiCl$  was studied up to a content of 60 mole% LiCl (Table 4, Fig. 4). Compounds  $3N_2H_4 \cdot LiCl$  (melting point +58.7°C) and  $2N_2H_4 \cdot LiCl$  (melting point +115.0°C) are formed. The system shows three eutectics, one with 13.7 mole% LiCl (crystallization temperature -16.0°C), one with 29.5 mole% LiCl (crystallization temperature +45.5°C), and one with 39.0 mole% LiCl (crystallization temperature +67.0°C). There are 4 figures, 4 tables, and 10 references: 3 Soviet, 3 US, and 4 German.

SUBMITTED: October 9, 1958

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S/078/60/005/010/016/021  
B004/B067

AUTHORS: Klochko, M. A., Batova, K. T.

TITLE: Solubility of the Fluorides and Iodides of Lithium and Cesium in Water and Some Other Solvents

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 10,  
pp. 2325-2328

TEXT: The authors wanted to study the relationship between solubility and other physical data, such as ionic radius and dielectric constant. The solubility of LiF, LiI, CsF, and CsI was determined at 25°, 50°, and 75°C in water, hydrazine, nitrobenzene, dioxane, toluene, and benzene, and at 0°, 25°, and 50°C in acetone. The experimental data for water are given in Table 1, those for the other solvents in Table 2. Table 3 shows the ratio  $r_k/r_a$  of the ionic radii for LiF, LiI, CsF, and CsI (according to A. F. Kapustinskiy). The solubility of these salts depends clearly on  $r_k/r_a$ . The more this ratio becomes equal to one, i.e., the more symmetric the configuration of the salt, the lower is its solubility in water. The symmetry of the salt is also significant for the solubility of

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Solubility of the Fluorides and Iodides of  
Lithium and Cesium in Water and Some Other  
Solvents

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nonaqueous solvents. In this case, however, the solubility decreases above all with the dielectric constant of the solvent. The exceptionally high solubility of CsI in hydrazine is probably due to the formation of a compound. The authors mention I. V. Tananayev et al. (Ref. 4). There are 3 tables and 11 references: 10 Soviet and 1 US.

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Sciences USSR)

SUBMITTED: July 18, 1959

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KLOCHKO, M.A.; STREL'NIKOV, A.A.

Electric conductivity and viscosity of the system ammonium nitrate -  
urea. Zhur. neorg. khim. 5 no.11:2483-2490 X '60. (NICA 13:11)  
(Ammonium nitrate) (Urea)

KLOCHKO, M.A.; GUBSKAYA, G.P.

Study of the system silver nitrate - acetamide by methods of physicochemical analysis. Zhur. neorg. khim. 5 no.11:2491-2498 N '60.  
(MIRA 13:11)

(Silver nitrate)

(Acetamide)

KLOCHKO, M.A.

Academician Nikolai Semenovich Kurnakov; on the one hundredth  
anniversary of his birth. Zhur. ob. khim. 30 no.11:3509-3513  
N'60. (MIRA 13:11)

(Kurnakov, Nikolai Semenovich, 1861-1941)

MEDVEDEVA, Z.S.; KLOCHKO, M.A.; KUZZNETSOV, V.G.; ANDREYEVA, S.N.

Phase diagram of the system palladium-tellurium. Zhur.  
neorg. khim. 6 no.7:1737-1739 Jl '61. (MIRA 14:7)  
(Palladium) (Tellurium)

BELOV, A.I.; IVANOV, K.I.; KLOGIKO, N.A.; SIDOROV, S.P.; USHKOV, N.N.;  
YARMAK, M.F.

Ways of improving bits for BA-100 air percussion drilling rigs.  
Vzryv. delo no.46/3:232-238 '61. (MIRA 15:1)  
(Boring machinery)